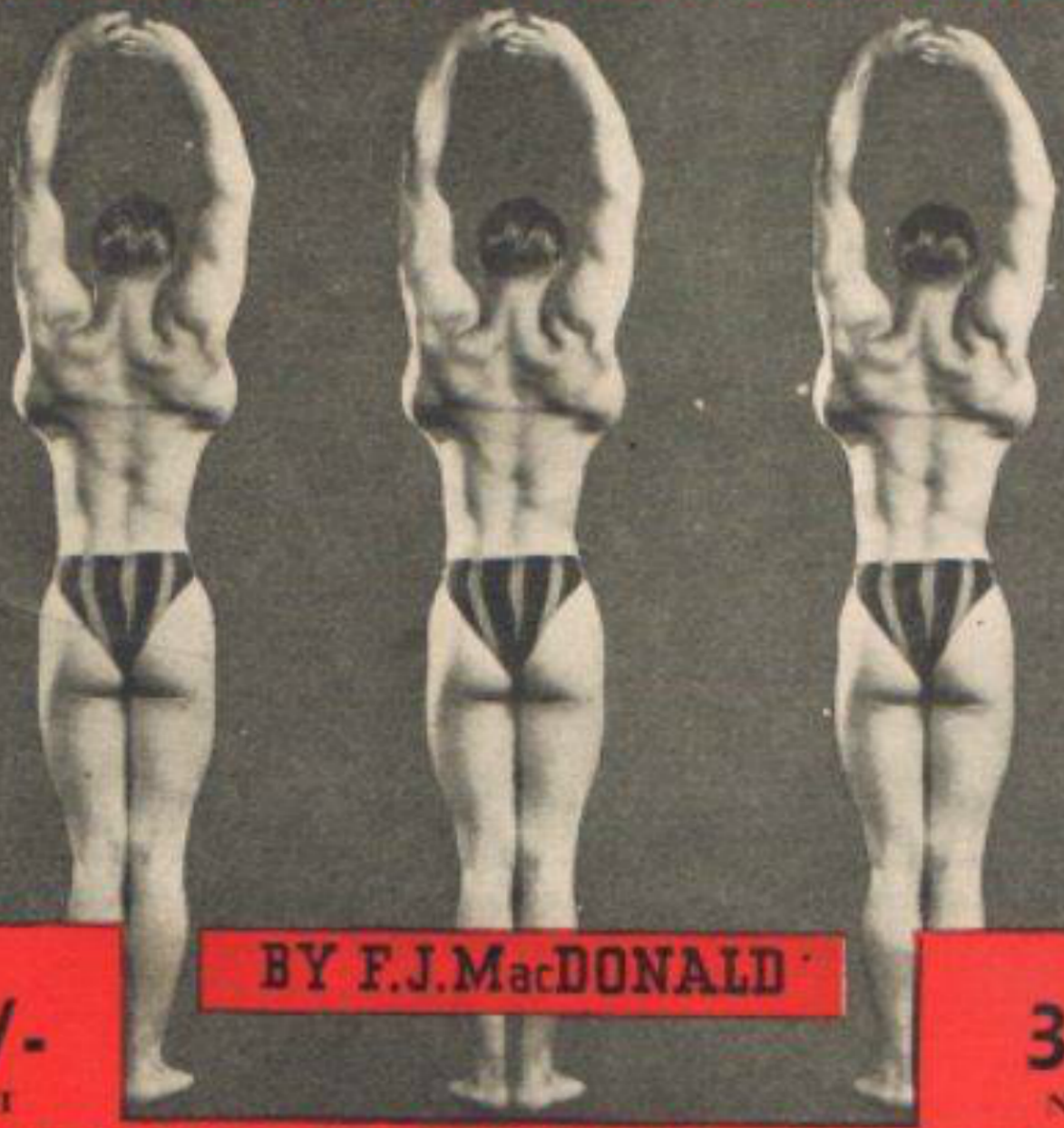
PHYSICAL CULTURE for BEGINNERS

WITHOUT THE USE OF APPLIANCES



BY F.J.MacDONALD

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PHYSICAL CULTURE FOR BEGINNERS

WITHOUT THE AID OF APPLIANCES

A Course of Self-resisting Exercises compiled by a Scandinavian Physical Culture Expert to prepare Novices for the more advanced Body-building movements

By

F. J. MacDONALD

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Introduction

WHEN HE SETS out to acquire physical betterment the beginner is usually in a quandary as to the best means to adopt for the fulfilment of his cherished ambitions. He finds he is offered a variety of Physical Culture courses and very often takes the plunge into unknown waters only to meet with early disaster. That he will straightaway strike a system ideally suited to himself is a gamble, and unless he finds the work of extreme interest and productive of the right results, he will quickly lose faith and eventually give up the idea altogether.

The newcomer to Physical Culture is too valuable a member of the community to be disillusioned and lost to the cause merely because of a bad start, and it is this fact that gives added value to this excellent text-book for, as its title implies, it has been specially written for the beginner. The author has made a deep study of the methods practised in Scandinavia and this knowledge he has compressed in the form of an excellent system for all-round bodily development which he has personally used over a great number of years. The reader who follows the exercises, will not only gain a physique of which he will be proud, but will automatically enjoy improved health.

There are thirty-four distinct exercises and they are so designed that the bodily movements involved embrace every part of the human anatomy and bring into play all the muscle groups. A good scheme is to try each exercise in turn, say one a day for a month, taking careful note how the various parts of the body respond to the work required of them. The student should then take his measurements, not that this is any aid to physical development or should be allowed to become a fetish, but in order to determine those places in his build where muscular improvement is most necessary. This enables him to concentrate on specific points until he has gained something approaching a proportionate figure, when he can then set out to achieve all-round development. The checking of measurements should not be taken weekly or even monthly as only disappointment will be felt after the initial increases have been attained. Once every thirteen weeks is quite sufficient. A standard measurement form is given here as a guide.

Date.....

Height .....ft. .....in.	Weight .....st. .....lb.
Reach .....ft. .....in.	Neck .....
Chest (Contracted)	(Expanded) .....
Waist	Hips .....
Forearm	Biceps .....
Wrist	Thigh .....
Calf	Ankle .....

Physical Culture for Beginners

THE SYSTEM OF exercises outlined in this volume is the result of a number of years of physical culture experience, and is graded to cover the entire muscular system. While little risk of strain is involved, persons suffering from any organic weakness should not attempt any of the movements described without the supervision of a qualified physician.

When circumstances permit, all exercises should be performed in the open air, or at least in a well-ventilated room, and clothing should be of the lightest description—shorts for preference.

Concentration is also of the greatest importance, and I suggest that you close the eyes and visualise the particular muscle or set of muscles affected becoming larger and stronger while contracted. Do not allow the mind to wander during exercise.

Remember that superb muscular development depends upon the complete *contraction* of the muscles, followed by their *complete relaxation*.

Breathing must be through the nose—on no account should the mouth be used for breathing—and all exercises must be performed slowly and without jerkiness.

On the command "Hold," the particular muscle or set of muscles should be contracted with vigour for a

second or two. The exercises may be repeated a certain number of times, but preferably until the muscles become *slightly* tired. It is hardly necessary to say that fatigue must be avoided.

In exercises where the hands are gripped, the correct method is to hold the thumb of the left hand with the thumb, first and second fingers of the right, while the first and second fingers of the left hand close on those of the right, or vice-versa. The grip should be changed alternately during exercise.

The best time for exercise is in the early morning before one's bath, and never within an hour of a meal.

Readers will no doubt find it an advantage to give the muscles a rest on one day in the week—the benefit is apparent the following day.

Lastly, exercise with the feeling and intention that the body shall benefit, and, above all, avoid allowing the various movements to become lifeless and mechanical.

Before we come to the exercises proper, certain facts concerning diet, dress, etc., should be considered.

Food

In view of the importance of food—an importance that has been in recent times much enhanced by the discovery of vitamins, resulting in more attention being paid to food values—it would be as well to examine, in the light of modern knowledge, the diet of the forefathers of the Baltic ethnic group whose physique excited the wonder of ancient writers. Let us take, for example, that of the Scotic people of Ireland and Scotland.

Dion Cassius Cocceianus (2nd century A.D.) writing of the Caledonians mentions *inter alia* a food which they prepared on all occasions, a small quantity of which when eaten made them insusceptible to hunger or thirst.

From our more perfect knowledge of the Caledonians, as well as of other peoples who still adhere to old customs, we have good reasons for assuming that the food referred to was uncooked-meal porridge. The Gaelic-speaking descendants of the old Scotic people have a saying that "Uncooked-meal porridge and whole-milk soured is the food of the strong man." (*Is biadh an fhir laidir brothas agus bainne-goirt.*)

On first consideration this may appear to be an unpalatable dish, but is not so. It can be made into quite an acceptable breakfast food for those who may not care for sour milk by substituting fresh milk with the addition of honey or sugar.

The porridge is prepared as follows: Mix in a small glass casserole a quantity of coarse oatmeal, sufficient for one person, with enough boiling water to form a thick paste; add a dessert spoonful of butter, cover and allow to stand for about ten minutes until the grain has swollen to the utmost. Serve in the casserole with milk, honey, sugar, etc. In summer-time or in tropical countries, coarse wheaten-meal should take the place of oatmeal, as the latter is too heating.

It is difficult today to obtain coarse-milled meal. In olden times this was not so, as the mills were then stone mills. Still, it should be possible to obtain coarse-milled oats or wheat by arrangement with a miller.

The old Scotic people on their warlike forays always carried oatmeal and onions with them: the oatmeal was prepared as uncooked porridge while the onions were eaten raw. It was found that the odour of the raw onion passed into the blood and thence through the lungs thereby reducing the risk of pulmonary troubles while sleeping in the open.

During peace times, the staple diet of those old people, in addition to that described, consisted of fresh milk, butter, cheese, fresh fruit and vegetables, *fuarag* or slightly roasted grain eaten with cold cream and honey, and, on rare occasions, meat. Salt food was not used. Two meals a day were partaken of, one in the morning and the other after sundown.

The beverages used were: Sowens, a drink made from the fermented inner husk of grain; Mead, a fermented drink made from honey and water; and Ale made from barley.

It has been truly said that "What is one man's meat is another man's poison." This being the case, one should eat that which agrees with one best. There are, however, certain facts about food that are either imperfectly understood or are overlooked.

Food is required to make the body grow, repair waste tissue, provide physical energy, and sustain life. It therefore follows that children and growing youths require more food of the right sort than adult persons. On the other hand, adults require just sufficient food to repair waste, while those engaged in heavy muscular exertion require more than those leading a sedentary life.

The ideal form of diet, however, should consist of five parts of Carbohydrates (bread, porridge, potatoes, etc.) to one each of Albumin (meat, fish, eggs, milk,

cheese, peas, beans, etc.) and Fat (butter, oils, egg-yolk, nuts, etc.), with the addition of a liberal supply of raw fresh fruit and vegetables in the form of salads. We give raw carrots to our favourite horses to improve their coats, and neglect to eat them raw ourselves.

Meat-eaters should not indulge in their favourite form of diet more often than once a day.

Food which requires cooking should, when possible, be cooked in a fireproof glass casserole, so as to conserve the vitamins. Fresh food which contains vitamins should always be preferred to canned, frozen, or other preserved food.

Eat the skins of those fruits that can be eaten, such as applies, grapes, etc. Eat the stones of grapes, raisins, etc., as they are essential to the intestines as a preventative of that cause of many bodily ailments, constipation.

Full-corn bread is also a preventive of constipation and a builder of bone and muscle; and, as it requires more mastication than white bread, it aids digestion and strengthens and preserves the teeth. The superior physique and good teeth of the full-corn-bread-eating Russians and other eastern Europeans is in sharp contrast to the small frames and bad teeth of those peoples who, during the past couple of generations, have taken to the use of white bread or "brown bread," that is, bread made from inferior "coloured" flour.

Don't eat fried or hard-boiled eggs: use only new-laid eggs which are best when eaten raw, soft-boiled or poached.

Use brown sugar in preference to white.

Don't eat polished rice (that generally sold in Europe and America).

Potatoes should be boiled, baked or roasted in their skins. The humble potato, besides being rich in vitamins B and C, contains calcium, phosphorus, and iron.

Growing children should be given cod-liver oil.

After exercise in the morning, drink a glass of pure cold water, and about six glasses during the day.

After the early morning glass of water, eat either an apple or an orange, or begin breakfast with raw fresh fruit.

Don't over-eat, eat slowly and masticate thoroughly.

Dress

Wear air-mesh underclothing winter and summer. Do not wear tight-fitting clothing nor tight-fitting boots and shoes. One should not overload oneself with heavy clothing in winter: should the temperature be low, put on a pullover or warm overcoat when going out.

Bathing

Take a bath daily after exercise and before breakfast. If young and physically fit and the reaction is prompt, take a cold shower. If elderly or the reaction is not prompt, take a bath of the temperature of the body (98·4 F.). A warm bath should be taken once a week just before going to bed but not within an hour of a meal.

Sea-bathing in the early morning ought not to be indulged in before one has had a cup of tea or coffee. At any other time, do not sea-bathe within an hour of a meal. Sea-bathing is beneficial and a preventive of rheumatism when the reaction is prompt; hence, one is enabled to judge how long one should remain in the water. After sea-bathing, stimulate the

circulation by smartly smacking the limbs and body with the open hands, commencing at the extremities.

Sun-Bathing

Sun-bathing should not be indulged in by those of a nervous temperament or who have or are suspected to have had tuberculosis, without the approval of a qualified physician. Commence with an exposure of ten minutes and gradually increase the period. In semi-tropical and tropical countries, sun-bathe in the mornings when the sun's rays are aslant. Do not sun-bathe in an enclosed space but where the air circulates freely: a summer air-bath is as beneficial as a sun-bath. Unless one feels exhilarated and well after sun-bathing, the practice should not be persisted in.

Remember, primitive man living in the tropics does not unnecessarily expose his body to the fierce rays of the sun without having first taken the precaution of smearing himself with butter, oil, etc.; therefore, sun-bathe in moderation.

Care of the Teeth

After eating, remove particles of food from the teeth by means of a non-metal tooth-pick. Clean the teeth thoroughly before retiring for the night, using dental-floss, a soft brush with a non-gritty tooth-paste, and a mouth wash containing a germicidal, such as thymol.

Those primitive races which possess the best teeth, besides using mainly a grain diet, invariably use a stalk of grass to remove the particles of food after eating, and wash their teeth with water, using the inside of the fore-finger as a brush. Have the teeth examined by a dentist once or twice a year.

Walking

Next to swimming, walking is one of the best forms of exercise when indulged in with vigour and with the intention that it shall do one good. In walking one should preserve an upright carriage. Do not carry the chest in a constrained position, but keep the head up and the back of the neck pressed against the collar. Keep the shoulder-blades in and do not allow them to protrude as if they were embryonic wings. The legs should swing from the hips, and each arm front and rear from the shoulder in unison with the opposite leg. Land on the heel and take off on the toe. One ought to walk at least about five miles daily.

Golden Rules

Sleep eight hours daily in a room where fresh air circulates. Sleep on the right side and do not use too heavy blankets. Before dropping off to sleep, repeat (taking care to move the lips) the Coué formula about twenty times: "Day by day and in every way I am growing better and better." Such auto-suggestion, provided the formula is repeated with conviction, will work wonders.

Exercise, work, play, and rest in moderation.

Always stand, sit, and walk erect.

Evacuate thoroughly and daily.

Keep the thoughts cheerful, pure and healthy.

Avoid self-drugging and contact with diseased persons.

After contact with potential sources of infection, wash with a soap containing one per cent of Mercuric Iodide.

Be examined carefully by a qualified physician once a year.

EXERCISE I

FOR SLIMMING AND DEVELOPING THE MUSCLES OF THE SIDES OF THE TRUNK

Position.—Stand erect with the feet apart and knees straight so that the body is evenly balanced on both feet.

One.—Raise the arms laterally outward from the sides until they are on a level with the shoulders.

Two.—Keeping the legs straight and the knees braced, bend the trunk to the left contracting the muscles on that side—*Hold.* (See Figure.)

Three.—Resume the position as detailed in *One.*

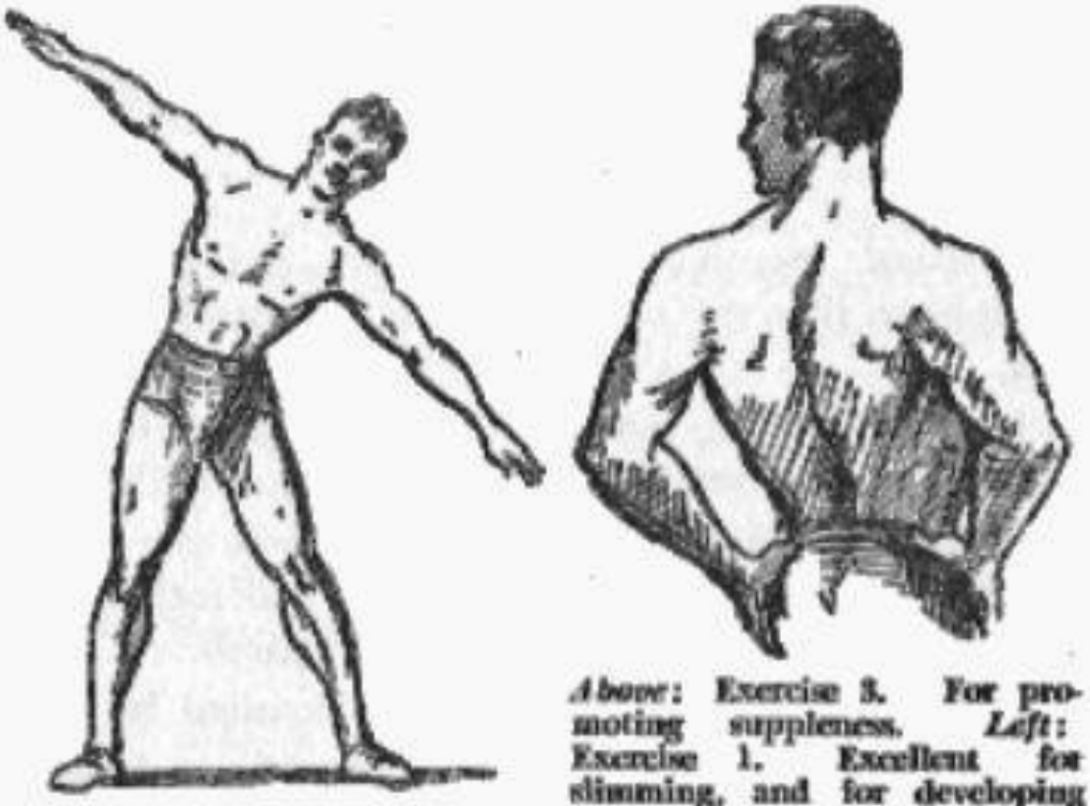
Four.—Keeping the legs straight and knees braced, bend the trunk to the right contracting the muscles on that side—*Hold.* Repeat by bending to left and right alternately.

On completion of the exercise, drop the arms to the sides and relax.

Breathing.—Exhale during the bending of the trunk, inhale while resuming the position as detailed in *One.*

During the exercise concentrate the mind on the contracted muscles of the sides of the trunk (the *Obliquus Abdominis Externus* and *Internus* and the *Latissimus Dorsi*).

[This exercise may be varied by gripping the hands at the full extent of the arms above the head and pulling strongly apart, but without loosening the grip during the lateral bending of the trunk; or, by gripping the hands at the back of the head and pulling strongly apart or outwards during the lateral bending of the trunk.]



Above: Exercise 3. For promoting suppleness. *Left*: Exercise 1. Excellent for slimming, and for developing the muscles of the sides of the trunk.

EXERCISE 11

FOR DEVELOPING THE UPPER ARMS

Position.—Stand erect with heels together and toes turned outward so as to form an angle of 45 degrees, knees straight, arms hanging by the sides, palms to the front.

One.—Clench the fists tightly and bend the wrists backwards so as to contract the muscles at the backs of the upper arms—*Hold.*

Two.—Flex the arms strongly upwards and keeping the upper arms close to the sides, contract the muscles at the front of the upper arms, then bend the wrists by dropping the clenched fists inwards—*Hold.*

Three.—Holding the muscles contracted as in *Two,* raise the arms as in Figure, throwing the head back and looking upwards.

Four.—Lower the arms through position *Two* to position *One*—*Hold.* Repeat.

On completion of the exercise, drop the arms to the sides and relax.

Breathing.—Inhale as the arms are raised to position *Three,* exhale as the arms are lowered to position *One.*

During the exercise concentrate the mind on the contracted muscles (the *Triceps Extensor Cubiti* and *Biceps Flexor Cubiti*).

EXERCISE III

FOR SLIMMING AND DEVELOPING AND SUPPLING THE MUSCLES OF THE SIDES OF THE TRUNK

Position.—Stand erect, feet apart, knees straight, body evenly balanced on both feet.

One.—Place the hands on the hips, heels of the hands pressed well down, elbows backwards.

Two.—Turn the trunk slowly round to the left as far as possible, looking over the left shoulder, keeping the feet, legs and hips firm—*Hold.*

Three.—Resume the position as in *One.*

Four.—Turn the trunk slowly round to the right as far as possible, looking over the right shoulder, keeping the feet, legs and hips firm—*Hold.* Repeat by turning right and left alternately.

On completion of the exercise drop the arms to the sides and relax.

Breathing.—Exhale while turning round, inhale while resuming the position as in *One.*

During the exercise concentrate the mind on the contracted muscles at the sides of the trunk (the *Serratus Magnus* and *Latissimus Dorsi*).

Above: Exercise 4. For developing the muscles of the upper portion of the back. *Left*: Exercise 2. One of the best-known exercises for developing the upper arms.

EXERCISE IV

FOR DEVELOPING THE MUSCLES OF THE UPPER PORTION OF THE BACK

Position.—Stand erect with the heels together, toes turned outward forming an angle of 45 degrees, knees straight.

One.—Grip the hands at the full extent of the arms above the head pulling them strongly, as it were, apart.

Two.—Still maintaining the pull lower the hands slowly to the back of the head (See Figure)—*Hold.*

Three.—Still maintaining the pull raise the hands slowly to the full extent of the arms as in *One.* Change the grip of the hands and repeat.

On completion of the exercise drop the arms to the sides and relax.

Breathing.—Inhale as the hands are raised, exhale as the hands are lowered.

During the exercise concentrate the mind on the contracted muscles of the upper portion of the back (the *Trapezius* and *Rhomboideus Major*, etc.).

EXERCISE V

BODY-CIRCLING FOR SUPPLING THE WAIST AND STIMULATING THE DIGESTIVE FUNCTIONS

Position.—Stand erect having the feet planted firmly apart, knees straight.

One.—Grip the hands behind the head and pull them strongly, as it were, apart, at the same time lean the head and trunk backwards as far as possible, and without altering the position of the feet, legs or hips (See Figure) describe as large a circle as possible slowly with the trunk by the right and front (See Figure), without allowing the trunk or arms to drop below the level of the hips—Repeat.

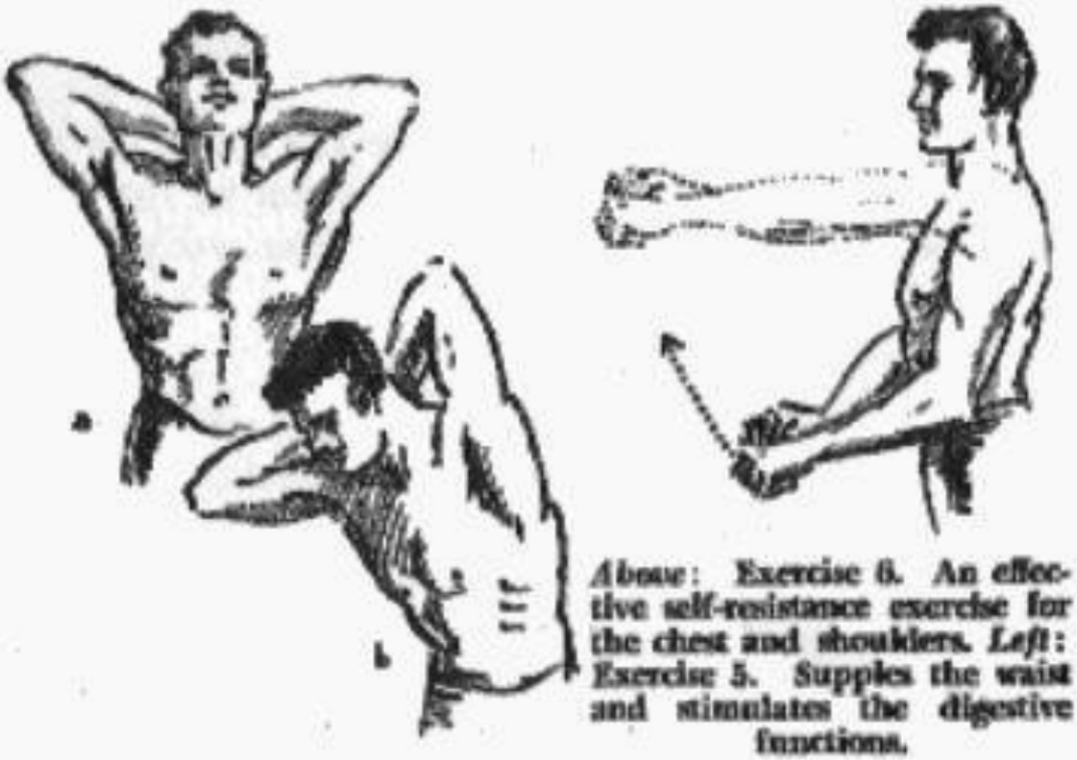
Two.—Change the grip of the hands and describe a circle with the trunk in the reverse direction by the left and front—Repeat.

On completion of the exercise drop the arms to the sides and relax.

Breathing.—Inhale as the trunk circles backwards, exhale as the trunk circles to the front.

During the exercises concentrate the mind on the muscles of the abdomen and small of the back (the *Rectus Abdominis* and *Erector Spinæ, etc.*).

This exercise may also be performed by gripping the hands at the full extent of the arms above the head and maintaining a strong outward pull during the circling of the body.



Above: Exercise 6. An effective self-resistance exercise for the chest and shoulders. *Left*: Exercise 5. Supples the waist and stimulates the digestive functions.

EXERCISE VI

FOR DEVELOPING THE SHOULDERS AND CHEST

Position.—Stand erect with heels together and toes turned outward so as to form an angle of 45 degrees, knees straight.

One.—Clench the fists tightly having the backs of the hands to the front.

Two.—Place the clenched fist of the right hand on the back of that of the left and raise the left arm slowly in front to the level of the shoulder at the same time exerting a strong downward pressure with the right (See Figure)—*Hold.*

Three.—Lower the left hand still maintaining the pressure of the right. Repeat on right and left sides alternately.

On completion of the exercise drop the arms to the sides and relax.

Breathing.—Inhale as the arms are raised, exhale as the arms are lowered.

During the exercise concentrate the mind on the contracted muscles of the shoulder and chest (the *Deltoid* and *Pectoralis Major*).

EXERCISE VII

FOR DEVELOPING AND SUPPLING THE MUSCLES OF THE BACK

Position.—Stand erect, feet apart, knees straight, body evenly balanced on both feet.

One.—Raise the arms to the full extent above the head keeping the hands the width of the shoulders apart.

Two.—Keeping the knees braced and the legs steady, lower the trunk, stretching the hands as far to the front as possible, and touch the ground in front of the feet.

Three.—Raise the trunk still stretching the hands as far to the front as possible until the position in *One* is attained, then lean back as far as possible without altering the position of the legs—*Hold.* Repeat.

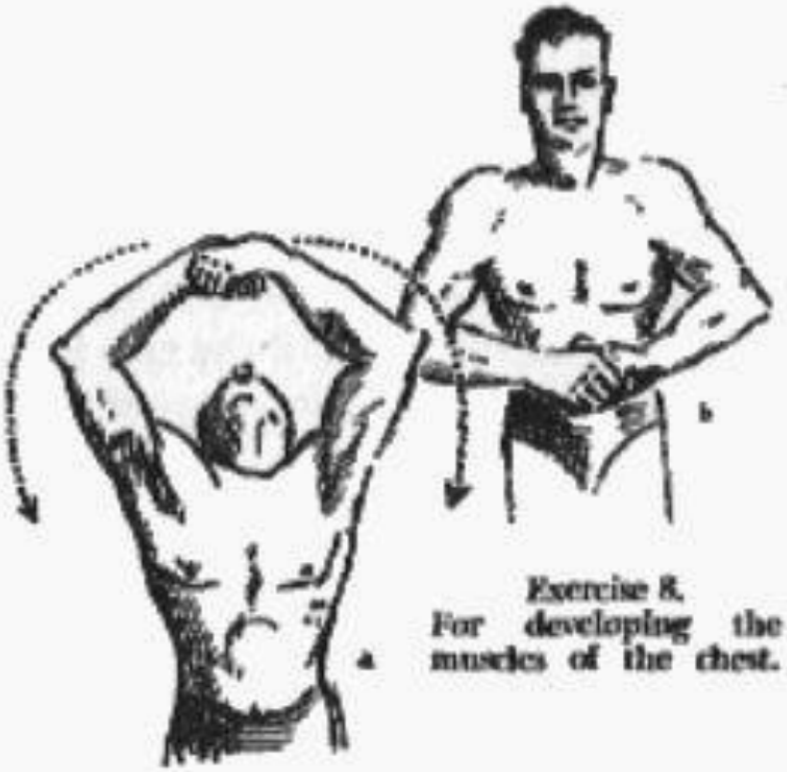
On completion of the exercise drop the arms to the sides and relax.

Breathing.—Inhale as the trunk is raised, exhale as the trunk is lowered.

During the exercise concentrate the mind on the contracted muscles on either side of the spine (the *Erector Spinæ*).

Exercise 9.
Develops the wrist and forearm.

Left: Exercise 7.
For developing and suppling the muscles of the back.



Exercise 8.
For developing the muscles of the chest.

EXERCISE VIII

FOR DEVELOPING THE MUSCLES OF THE CHEST

Position.—Stand erect, heels together, toes turned outward so as to form an angle of 45 degrees, knees straight.

One.—Raise the arms laterally above the head, bringing the hands together, one thumb inside the other; look towards the hands and press them strongly together (See Figure position *One*)—*Hold.*

Two.—Lower the arms laterally, while doing so contract the muscles of the chest and under the arms, and bring the hands together about six inches in front of the breast bones; leaning slightly forward press the hands strongly together, one thumb inside the other (See Figure, position *Two*)—*Hold.* Repeat.

On completion of the exercise drop the arms to the sides and relax.

Beathing.—Inhale as the arms are raised, exhale as the arms are lowered.

During the exercise concentrate the mind on the contracted muscles of the chest and upper ribs (the *Pectoralis Major* and *Serratus Magnus*).

EXERCISE IX

FOR DEVELOPING THE MUSCLES OF THE FOREARM

Position.—Stand erect, heels together, toes turned outwards so as to form an angle of 45 degrees, knees straight.

One.—Place the elbows on the hips in front of the body, clench the fists, backs of hands upwards.

Two.—Bend the wrist by dropping the fist downwards (See Figure)—*Hold.*

Three.—Bend the wrist by raising the fist upwards. —*Hold.* Repeat.

On completion of the exercise drop the arms to the sides and relax.

Breathing.—Normal.

During the exercise concentrate the mind on the contracted muscles of the forearms (the *Extensor Carpi* and *Supinator Longus*).

EXERCISE X

FOR DEVELOPING THE MUSCLES OF THE BACK, UPPER RIBS, AND SHOULDERS

Position.—Stand erect, heels together, toes turned outwards so as to form an angle of 45 degrees, knees straight.

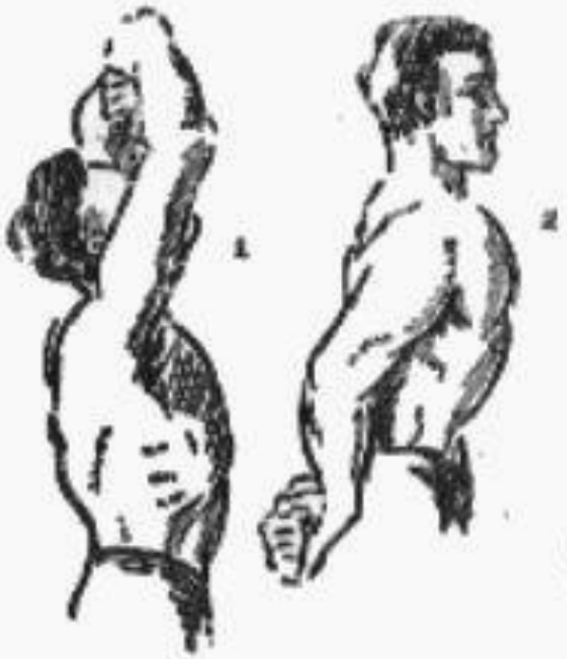
One.—Raise the arms laterally and grip the hands above the head; while looking upwards pull the hands strongly as it were apart (See Figure, position *One*)—*Hold.*

Two.—Lower the arms laterally contracting the muscles under the arms in doing so and grip the hands at the full extent of the armsbehind the back, pulling the hands, as it were, strongly apart (See Figure, position *Two*)—*Hold.* Repeat.

On completion of the exercise drop the arms to the sides and relax.

Breathing.—Inhale as the arms are raised, exhale as the arms are lowered.

During the exercise concentrate the mind on the contracted muscles of the back, upper ribs, and shoulders (the *Latissimus Dorsi, Serratus Magnus* and *Deltoid*).



Exercise 10. For developing muscles of the back, upper ribs and shoulders.

EXERCISE XI

FOR DEVELOPING THE MUSCLES OF THE UPPER ARM SHOULDERS, AND CHEST

Position.— Stand erect, heels together, toes turned outwards so as to form an angle of 45 degrees, knees straight.

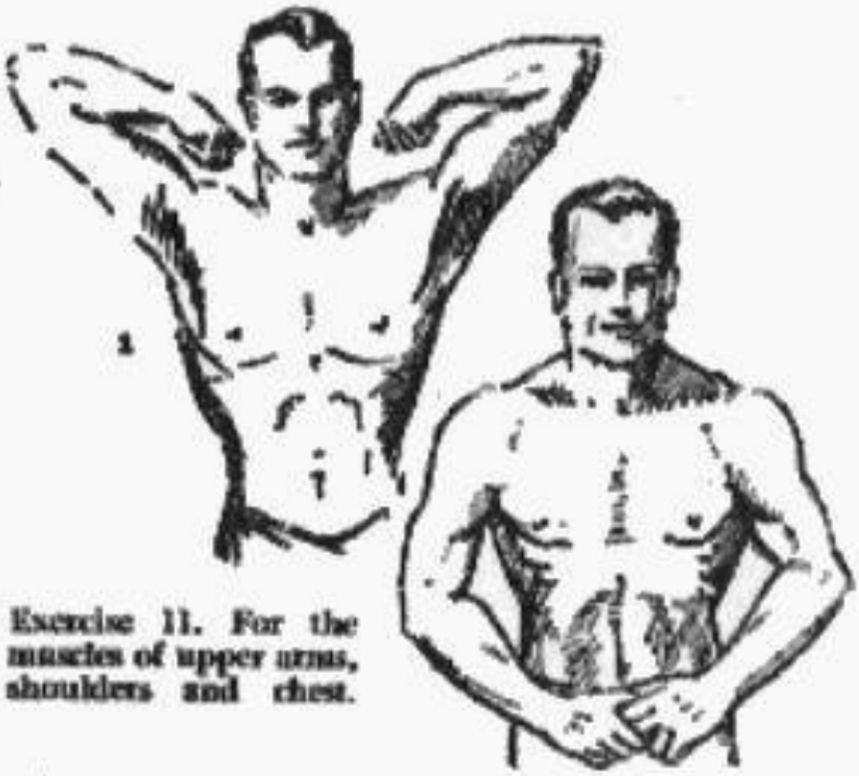
One.—Raise the arms laterally palms upwards on a level with the shoulders, clench the fists, flex the arms contracting the biceps strongly and drop the fists downwards to the shoulders by slightly raising the upper arms (See Figure, position *One*)—*Hold.*

Two.—Lower the arms palms downwards with a *lateral* sweeping movement contracting the muscles of the upper ribs in doing so and grip the hands in front of, and close to, the body; leaning slightly forward pull the hands, as it were, strongly apart (See Figure, position *Two*)—*Hold.* Repeat.

On completion of the exercise drop the arms to the sides and relax.

Breathing.—Inhale as the arms are raised, exhale as the arms are lowered.

During the exercise concentrate the mind on the biceps of the arms, the muscles on the ribs under the arms, and the muscles above the shoulders (the *Biceps Flexor Cubiti, Serratus Magnus,* and *Trapezius*).



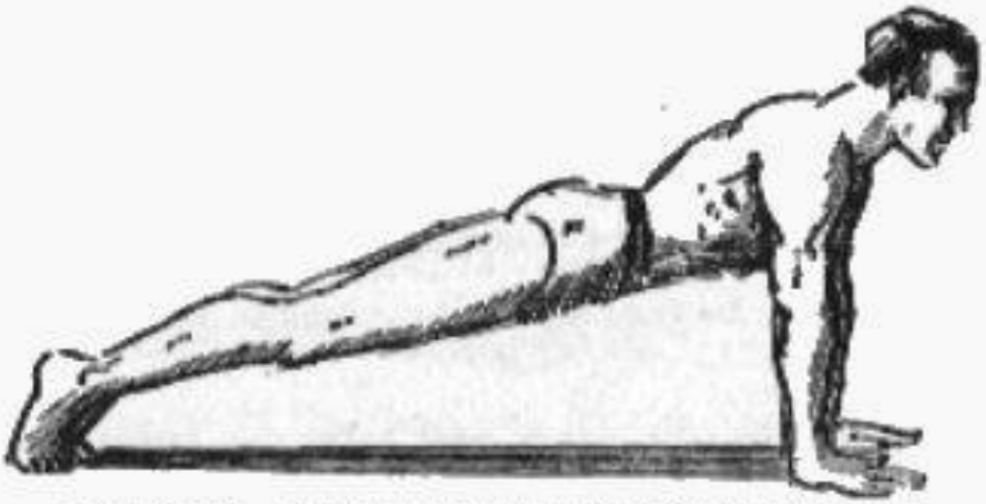
Exercise 11. For the muscles of upper arms, shoulders and chest.

EXERCISE XII

FOR CORRECTION OF "ROUND SHOULDERS" AND DEVELOPING THE CHEST AND MUSCLES OF THE SHOULDERS AND BACK

Position.—Lie down full length face downwards and place the hands on the ground *directly below* the shoulders, tips of the fingers pointing *slightly* inwards, feet together.

One.—Raise the body from the ground by straightening the arms to their full extent, knees straight;



Exercise 12. Excellent exercise for correcting "round shoulders"

without allowing the body to sag throw the head back contracting the muscles on either side of the spine, weight of the body to be supported on the toes and hands (See Figure)—*Hold.*

Two.—By bending the arms lower the chest almost to the ground, but without touching it—*Hold.* Repeat.

On completion of the exercise, either rise from the ground by bringing both feet forward by bending the knees, or turn over on the back and relax.

Breathing.—Inhale as the body is lowered, exhale as the body is raised.

Concentrate the mind on the muscles of the upper arms, shoulders, chest and back (the *Triceps Extensor Cubiti, Deltoid, Pectoralis Major,* and *Erector Spinæ*).

EXERCISE XIII

FOR DEVELOPING THE MUSCLES IN FRONT OF THE NECK AND FILLING "SALT CELLARS"

Position.—Lie down full length on the back, feet together, knees straight.

Exercise 13. Develops the muscles in front of the neck and fills in "salt cellars."

One.—Raise the arms and take the point of the chin between the fore-finger and thumb of each hand.

Two.—Raise the head from the ground at the same time pressing down strongly with both hands (See Figure)—*Hold.*

Three.—Lower the head to the ground still maintaining the pressure with the hands. Repeat.

On completion of the exercise, relax by lying with the arms on the ground by the sides.

Breathing.—Exhale as head is raised, inhale as head is lowered.

During the exercise concentrate the mind on the muscles in front of the neck (the *Sternocleidomastoid* and *Sternothyroid*).

EXERCISE XIV

FOR DEVELOPING THE ABDOMINAL MUSCLES

Position.—Lie full length on the back, hands clasped under the head, knees straight, heels raised slightly from the ground, feet pointed.

One.— Raise the right leg *slowly*, keeping the knee straight and the foot pointed until the leg forms an angle of from 45 to 50 degrees with the ground. *Do not raise the leg to a vertical position.* (See Figure)—*Hold.*

Exercise 14. For developing the abdominal muscles.

Two.—Slowly lower the right leg *almost* to the ground and raise the left leg in a manner similar to that described in *One—Hold*. Repeat; legs to be raised and lowered alternately without allowing the heels to touch the ground, or a greater angle than 50 degrees to be formed therewith.

If unable to keep the legs from touching the ground when lowered, they may be allowed to rest thereon until the abdominal muscles become stronger.

On completion of the exercise, relax by lying with the arms on the ground by the sides.

Breathing.—Exhale as the leg is raised and inhale as the leg is lowered.

During the exercise concentrate the mind on the contracted abdominal muscles (the *Rectus Abdominis* and *Obliquus Abdominis Externus*).

EXERCISE XV

FOR DEVELOPING THE ABDOMINAL MUSCLES

Position.—Lie full length on the back, hands clasped under the head, knees straight, heels raised clear of the ground, feet pointed and together.

One.—Raise both legs together *slowly*, keeping the knees straight and the feet pointed until the legs form an angle of from 45 to 50 degrees with the ground, contracting the abdominal muscles to the utmost—*Hold.*

Two.—Slowly lower both legs, keeping the knees straight and the feet pointed, *almost* to the ground—*Hold.* Repeat.

Beginners may allow the feet when lowered to touch the ground until the muscles become stronger.

On completion of the exercise, relax by lying with the arms on the ground by the sides.

Breathing.— Exhale as the legs are raised, inhale as the legs are lowered.

During the exercise concentrate the mind on the contracted muscles of the abdomen (the *Rectus Abdominis*).

EXERCISE XVI

FOR STIMULATING THE DIGESTIVE SYSTEM AND PREVENTING CONSTIPATION

Position.—Lie full length on the back, feet together, arms on the ground by the sides.

One.—Imagine the abdomen as if it were the dial of a clock. Draw the wall of the abdomen upwards to 12 o'clock and circle it round in the reverse way to that in which a clock goes, namely, by the 9, 6, 3 to 12. Repeat.

Two.—Reverse the process by circling the wall of the abdomen in the direction that the hands of a clock move Repeat.

Should the muscles of the abdomen not be under sufficient control to admit of the exercise being carried out as described, the muscles may be assisted. In *One* by placing the open *left* hand flat upon the abdomen and applying a gentle pressure in order to assist the muscles perform the movement. The *right* hand may be likewise used to assist in *Two*.

On completion of the exercise, relax by lying with the arms on the ground by the sides.

Breathing.—Exhale as the wall of the abdomen rises to 12 o'clock, inhale as the wall of the abdomen is lowered to 6 o'clock.

Concentrate the mind on the abdomen and the benefit which the large intestine (the *Ascending Transverse*, and *Descending Colon*) is receiving from the massaging effect of the exercise.

EXERCISE XVII

FOR DEVELOPING THE MUSCLES ON EITHER SIDE OF THE SPINE

Position.—Lie down full length, face downwards, knees straight, heels together, feet pointed, hands gripped at the full extent of the arms behind the back as in position *Two* of Exercise X.

One.—Keeping the knees straight and feet pointed pull strongly with the hands in the direction of the feet, at the same time raise the head and feet from the ground (without bending the knees) and, as it were, try to make the feet and back of the head meet—*Hold*.

Two.—Lower the head and feet to the ground and relax the pull of the arms. Repeat, as in *One* changing the grip of the hands alternately.

On completion of the exercise, turn on to the back and relax by lying with the arms on the ground by the sides.

Breathing.—Exhale as the head and feet are raised, inhale when lowered.

During the exercise concentrate the mind on the contracted muscles of the spine (the *Erector Spinæ*).

EXERCISE XVIII

THE REJUVENATING EXERCISE

Position.—Lie down full length on the back, knees straight, heels together, feet pointed, arms on the ground by the sides palms downwards.

One.—Bring the legs *slowly* upwards above the head, keeping the knees straight, heels together, toes pointed, and touch the ground *lightly* behind the head with the toes (See Figure)—*Hold.*

Exercise 18. A valuable Rejuvenating exercise.

Two.—Lower the feet *slowly* to the original position but without allowing the heels to touch the ground; keep the knees straight, heels together, and feet pointed—*Hold.* Repeat.

N.B.—Keep the hands and arms on the ground during the exercise, and the feet and legs under control.

Beginners should place a couple of cushions behind (*not under*) the head and touch them lightly with the toes until such time as confidence is gained in doing the exercise as above detailed.

On completion of the exercise, relax by lying with the arms on the ground by the sides.

Breathing.—Exhale as the legs are raised, inhale as the legs are lowered.

During the exercise concentrate the mind on the muscles of the abdomen and small of the back (the *Rectus Abdominis* and *Erector Spinæ*).

EXERCISE XIX

FOR DEVELOPING THE MUSCLES ON THE SIDES OF THE NECK

Position.—Lie down full length on the right side.

One.—Place the open left hand on the side of the head and press strongly downwards while, at the same time, raising the head from the ground—*Hold.*

Two.—Lower the head still exerting pressure with the left hand, and repeat.

Repeat the exercise while lying on the left side, and exerting pressure on the side of the head with the open right hand.

On completion of the exercise, turn on to the back and relax by lying with the arms on the ground by the sides.

Breathing.—Exhale as head is raised, inhale as head is lowered.

During the exercise concentrate the mind on the muscles on the sides of the neck (the *Sternocleido-mastoid* and *Omohyoid*).

Exercise 20. Develops the muscles of the abdomen.

EXERCISE XX

FOR DEVELOPING THE MUSCLES OF THE ABDOMEN

Position.—Sit down on the ground and place the feet under some article of furniture to prevent the heels from rising from the ground, keep the knees straight, and fold the arms lightly across the chest.

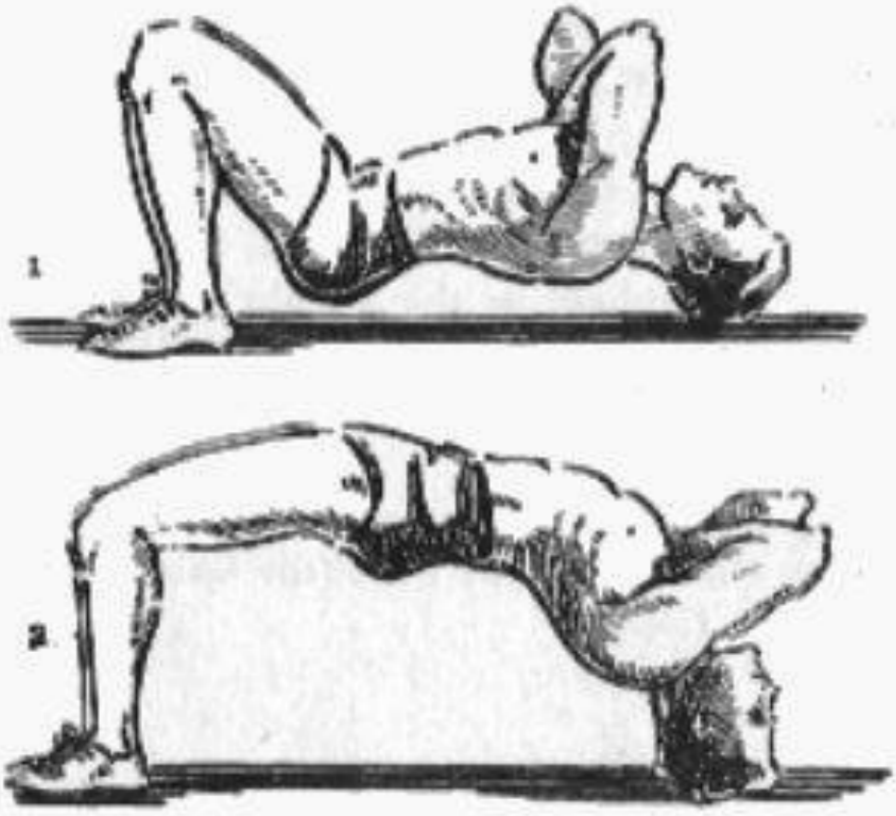
One.—Lean slowly backwards and touch the *back of the head* lightly on the ground.

Two.—Rise slowly to a sitting position, strongly contracting the abdominal muscles in doing so, *the body and back of the head to form an angle of about 45 degrees with the ground* (See Figure)—*Hold.* Repeat.

On completion of the exercise, relax by lying with the arms on the ground by the sides.

Breathing.—Inhale as the head and body are lowered, exhale as the body is raised.

During the exercise concentrate the mind on the contracted abdominal muscles (the *Rectus Abdominis*).



Exercise 21. Develops the neck muscles.

EXERCISE XXI

THE "WRESTLER'S BRIDGE" FOR DEVELOPING THE MUSCLES OF THE NECK

Position.—Lie on the back, knees bent, feet planted firmly on the ground and *apart* so as to prevent swaying to the side, arms folded lightly on the chest.

One.—Raise the back and shoulders from the ground so that the weight of the body is supported on the feet and back of the head (See Figure, position *One*).—*Hold.*

Two.—Lean back slowly so that the weight of the body is transferred from the back to the *front* of the head, at the same time allow the folded arms to drop backwards and above the face (See Figure, position *Two*)—*Hold.* Repeat, as in *One* without allowing

the back or shoulders to touch the ground. A small cushion should be placed under the head while exercising.

On completion of the exercise, relax by lying with the arms on the ground by the sides.

Breathing.—Inhale as the weight of the body is being transferred from the *back* to the *front* of the head, exhale as the weight is being transferred to the *back* of the head.

During the exercise concentrate the mind on the muscles at the back of the neck (the *Splenius Capitis* and *Splenius Colli*).

EXERCISE XXII

FOR DEVELOPING THE MUSCLES OF THE HIPS, UPPER PORTION OF THE THIGHS, AND ABDOMEN

Position.—Lie full length on the back, hands clasped under the head, legs together, knees straight, feet pointed.

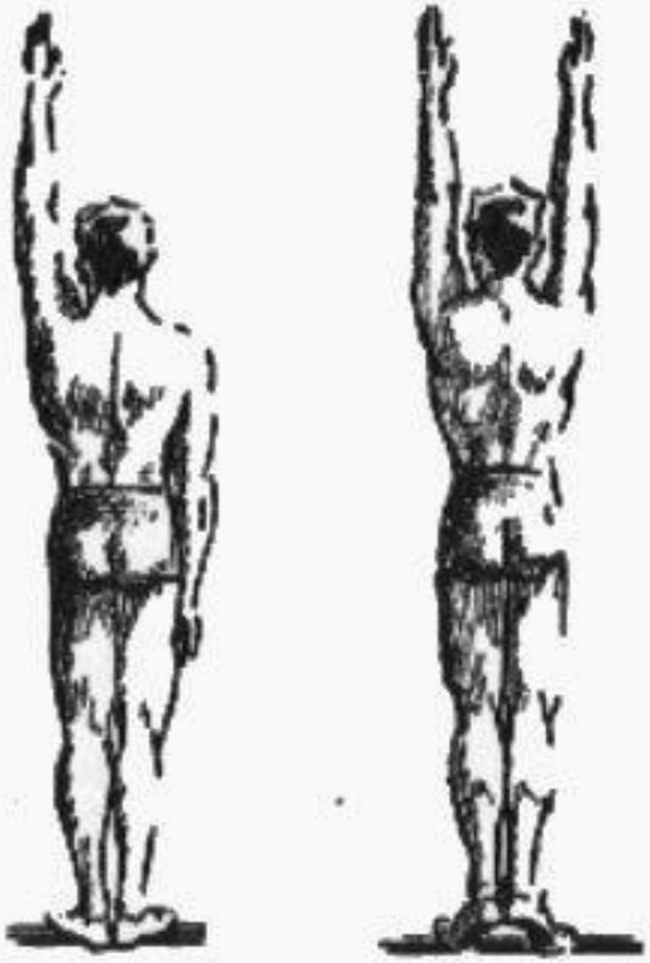
One.—Raise both feet about 18 inches from the ground, knees straight, and open the legs slowly to their fullest extent—*Hold.*

Two.—Still keeping the knees straight and the feet pointed, cross the thighs slowly, scissors fashion, squeezing them strongly together—*Hold.* Repeat as in *One.* Do not allow the feet or legs to touch the ground during the exercise.

On completion of the exercise, relax by lying with the arms on the ground by the sides.

Breathing.—Exhale as the legs are opened, inhale as the legs are crossed.

During the exercise concentrate the mind on the muscles of the hips, upper thighs, and abdomen (the *Gluteus Medius, Adductor Longus, Gracilis,* and *Rectus Abdominis*).



Left: Exercise 23. For increasing the stature *Right:* Exercise 24. Increases stature, Develops the calves, and strengthens the arches of the feet.

EXERCISE XXIII

FOR INCREASING THE STATURE

Position.—Stand erect, heels together, feet turned outwards so as to form an angle of 45 degrees, knees straight, arms hanging by the sides.

One.—Raise the left arm in front of the body to the full extent above the head, palm of the hand to the front and, without changing the position of the feet or legs, try, as it were, to touch the ceiling, exerting the utmost effort in doing so—*Hold.*

Two.—Lower the left arm and then raise the right arm in a similar manner to that described in *One*—*Hold.* Repeat.

On completion of the exercise, lower the arms to the sides and relax.

Breathing.—Inhale as the arm is raised, exhale as the arm is lowered.

During the exercise concentrate the mind on the stretching of the frame.

This exercise need not be performed by those of normal stature.

EXERCISE XXIV

FOR INCREASING THE STATURE, DEVELOPING THE CALVES, AND STRENGTHENING THE ARCHES OF THE FEET

Position.—Stand erect, heels together, toes turned outwards so as to form an angle of 45 degrees, knees straight, hands raised to the full extent of the arms above the head, palms to the front.

One.—Rise to the fullest extent on the toes, at the same time looking upwards and reaching to the utmost extent (See Figure)—*Hold.*

Two.—Sink downwards but without allowing the heels to touch the ground, or lowering the arms —*Hold.* Repeat.

On completion of the exercise, lower the arms to the sides and the heels to the ground and relax.

Breathing.—Inhale when rising on the toes, exhale when sinking on the heels.

During the exercise concentrate the mind on the muscles of the calves of the legs (*Gastrocnemius*), and the stretching of the frame.

Those of normal stature need not raise the arms above the head, but may place the hands akimbo on the hips, elbows backwards as in Exercise III.*

EXERCISE XXV

FOR STRENGTHENING THE GRIP AND DEVELOPING THE MUSCLES OF THE HANDS AND WRISTS

Position.—Stand erect, knees straight, heels together, feet turned outwards so as to form an angle of 45 degrees, arms raised laterally from the sides, elbows bent, hands the height of the head (See Figure).

One.—Clench the left fist tightly at the same time open the right hand fan-wise and vigorously to the full extent of the fingers.

Repeat by clenching and opening each hand alternately, care being taken not to allow the hands to drop below the height of the head.

On completion of the exercise, lower the arms to the sides and relax.

Breathing.—Normal.

During the exercise concentrate the mind on the muscles of the hands and wrists.

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*For the correction of flat feet the exercise should be performed with the toes together and the heels turned outwards.

Exercise 25. Strengthens the grip and develops wrists and hands

EXERCISE XXVI

FOR DEVELOPING THE MUSCLES OF THE FRONT AND SIDES OF THE THIGHS

Position.—Stand erect, heels together, knees straight, left hand resting lightly on the back of a chair.

One.—Kneel slowly down until the right knee *almost* touches the ground, care being taken that the weight of the body is completely supported by the bent left leg—*Hold.*

Two.—Raise the weight of the body by slowly straightening the left leg. Continue and repeat on the right leg.

On completion of the exercise, resume the upright position and relax.

Breathing.—Exhale as the body is lowered, inhale as the body is raised.

During the exercise concentrate the mind on the muscles of the front and sides of the thighs (the *Rectus Cruris, Sartorius, Vastus Externus* and *V. Internus* of the *Quadriceps Extensor*).

EXERCISE XXVII

FOR DEVELOPING THE MUSCLES OF THE BACK AND FRONT OF THE THIGHS

Position.—Stand erect, heels together, knees straight, left hand resting lightly on the back of a chair.

One.—Bring the right leg to the front clear of the ground, knee straight, turn the toe upwards and press the heel down as far as possible, thereby contracting the muscles on the front of the leg (See Figure)—*Hold.*

Exercise 27. For developing the muscles at the back and front of the thighs.

Two.—Bending the knee, bring the leg to the rear with the toe pointed, thereby contracting the muscles at the back of the leg—*Hold.* Continue and repeat with the left leg.

On completion of the exercise, resume the upright position and relax.

Breathing.—Normal.

During the exercise concentrate the mind on the muscles on the front of the shin and thigh (the *Tibialis Anticus, Rectus Cruris,* and *Vastus Internus* of the *Quadriceps Extensor*), and those of the calf and back of the thigh (the *Gastrocnemius, Biceps Flexor Cruris* and *Glutous Maximus*).

EXERCISE XXVIII

FOR DEVELOPING THE MUSCLES OF THE HIPS AND SIDES OF THE THIGHS

Position.—Stand erect, heels together, toes turned outwards so as to form an angle of 45 degrees, knees straight, left hand resting on the back of a chair.

One.— Keeping the knees straight and the foot pointed, raise the right leg slowly and, as high as possible, laterally outwards, without changing the upright position of the body, at the same time resisting the movement of the leg by pressure from the open right hand which should be allowed to slide down the outside of the thigh.—*Hold.*

Two.—Lower the right leg, keeping the knee straight and foot pointed, and cross it as far as possible, scissors fashion, in front of the left leg—*Hold.* Continue and repeat with the left leg.

On completion of the exercise, resume the upright position and relax.

Breathing.—Exhale as the leg is raised, inhale as the leg is lowered.

During the exercise concentrate the mind on the muscles of the outside of the thighs and hips (the *Vastus Externus* of *Quadriceps Extensor*).

EXERCISE XXIX

FOR DEVELOPING THE CALVES AND THIGHS

Position.—Stand erect, heels together, toes turned outwards so as to form an angle of 45 degrees, knees straight.

One.—Clasp the hands behind the head, rise on the toes and sink slowly downwards by bending the knees, trunk to be held upright (See Figure)—*Hold.*

Two.—Rise *slowly* to the upright position and lower the heels to the ground. Repeat.

On completion of the exercise, lower the arms to the sides, resume the upright position and relax.

Breathing.— Exhale as the body is lowered, inhale as the body is raised.

During the exercise concentrate the mind on the muscles of the calves and the front of the thighs (the *Gastrocnemius, Rectus Cruris,* and *Vastus Internus* of *Quadriceps Extensor*).

[This exercise may also be done (in position *One*) by raising the arms in front of the body to the height of the shoulders, palms downwards, instead of clasping the hands behind the head, but care should be taken to preserve the upright position of the trunk when squatting.]

Exercise 29.
Develops calves and thighs.

Exercise 30.
Corrects "Round Shoulders," and develops muscles of upper region of the spine.

EXERCISE XXX

FOR CORRECTION OF "ROUND-SHOULDERS" AND DEVELOPMENT OF THE MUSCLES OF THE UPPER REGION OF THE SPINE

Position.—Stand upright, heels together, toes turned outwards so as to form an angle of 45 degrees, knees straight.

One.—Lean the head forward and clasp the hands behind the head. (See Figure.) *Do not exert any pull while the head is held in this position.*

Two.—Raise the head upwards and backwards, at the same time pulling strongly downwards and forwards with the hands, thereby contracting the muscles on either side of the upper part of the spine—*Hold.* Repeat.

N.B.—Be careful not to exert any pull with the hands while the head is being lowered to position One.

On completion of the exercise, lower the arms to the sides and relax.

Breathing.—Inhale as the head is raised, exhale as the head is lowered.

During the exercise concentrate the mind on the contracted muscles on either side of the upper portion of the spine (the *Trapezius*).

EXERCISE XXXI

FOR CORRECTION OF "PIGEON-TOE," "SPLAY-FOOT," AND FOR STRENGTHENING THE ANKLES, AND DEVELOPING THE MUSCLES OF THE SHINS

Position.—Sit on a chair or settee and raise the feet from the floor keeping the knees straight.

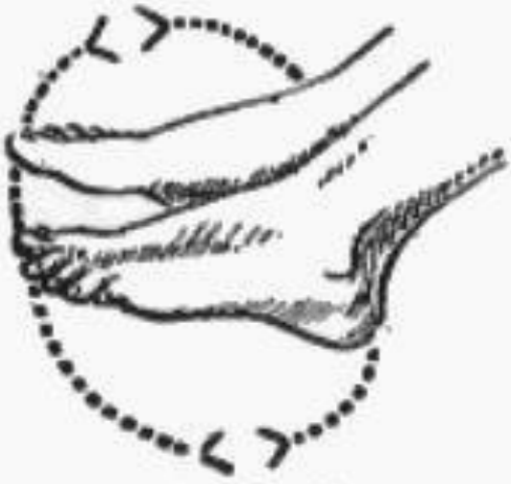
One.—Circle both feet *slowly* inwards *towards each other*, pointing the toes and raising the feet upwards to the utmost extent, so as to contract the muscles on the fronts and sides of he shins.

Two.—Reverse the movement by circling both feet *slowly* outwards from each other, pointing the toes and raising the feet upwards to the utmost extent, so as to contract the muscles at the fronts and sides of the shins.

On completion of the exercise relax.

Breathing.—Normal.

During the exercise concentrate the mind on the contracted muscles on the fronts and sides of the shins (the *Tibialis Anticus, Soleus* and *Extensor Longus Digitorum*).



Exercise 31.
Corrects "Pigeon Toe" and "Splay Feet."

Exercise 32.
Develops muscles on fronts of shins.

EXERCISE XXXII

FOR DEVELOPING THE MUSCLES ON THE FRONTS OF THE SHINS

Position.—Sit on a chair or settee and raise the feet from the floor keeping the knees straight.

One.—Turn the feet slowly upwards to the fullest extent contracting the muscles on the fronts of the shins (See Figure)—*Hold.*

Two.—Point the feet to the fullest extent and repeat as in *One.* Continue.

On completion of the exercise relax.

Breathing.—Normal.

During the exercise concentrate the mind on the contracted muscles on the fronts of the shins (the *Tibialis Anticus*).

EXERCISE XXXIII

FOR STRENGTHENING THE MUSCLES OF THE FEET

Position.—Sit on a chair or settee and raise the feet from the floor keeping the knees straight.

One.— Turn the feet upwards to their fullest extent and, as it were, clench the feet by closing the toes —*Hold.* Repeat.

Two.—Point the feet to the fullest extent and, as it were, clench the feet by closing the toes—*Hold.* Repeat.

On completion of the exercise relax.

Breathing.—Normal.

During the exercise concentrate the mind on the muscles of the feet.

EXERCISE XXXIV

DEEP-BREATHING FOR STRENGTHENING THE LUNGS AND VITAL ORGANS

Position.—Stand erect, heels together, toes turned outwards so as to form an angle of 45 degrees, head and trunk upright but not to be held in a constrained position, arms hanging to their full extent by the sides.

One.—Raise the arms laterally and slowly from the sides, backs of the hands upwards, inhaling slowly through the nose so as to distend the lower lobes of the lungs.

Two.—When the arms have reached the level of the shoulders, turn the palms of the hands upwards.

Three.—Continue to raise the hands slowly at the full extent of the arms above the head, inhaling through the nose during the upward lift of the arms. Turn the face upwards and bring the tips of the fingers together—*Pause.*

Four.—Lower the arms slowly, at the same time, exhaling through the nose.

Five.—When the arms reach the level of the shoulders, turn the palms of the hands downwards and continue to lower the arms to the sides, at the same time expel through the nose the last remnants of breath by drawing the stomach inwards and upwards —*Pause.* Continue.

The five motions above detailed should glide into one another imperceptibly.

During the exercise concentrate the mind on the lungs and vitals and the beneficial effects accruing thereto from the deep breathing.

EYE EXERCISE

In order to strengthen and beautify the eyes, the following exercise should be practised whenever, during the day, it becomes necessary to wash the face. A basin half-filled with pure cold water should be used, care being taken to see that the basin is aseptic:

One.—Take a half breath and hold it, then immerse the face in the cold water, open the eyes wide turning the eyeballs up, down, right, and left.

Continue moving the eyeballs until it is found necessary to take another breath.

Two.—Take a half breath and immerse the face as before, open the eyes wide and circle the eyeballs, making as large and as complete a circle as possible. Do this a couple of times, then reverse the movement of the eyeballs until it becomes necessary to take another breath.

Three.—Take a half breath and immerse the face. Open the eyes wide, turn the eyeballs upwards and wink the eyelids rapidly. Repeat by winking the eyelids rapidly while the eyeballs are turned down, right, and left.

The foregoing exercise may be practised whilst sea-bathing. At first, the exercise may give rise to a slight feeling of discomfort, but if carried out daily, the feeling of discomfort will disappear and the eyes will become strong and clear; so strong in fact that, without much inconvenience, one will be enabled to face a strong head-wind while hiking or driving.

MASSAGE

For the reduction of adipose tissue and the stimulation of the action of the blood vessels, ligaments, vital organs, and nerves, massage from the extremities in the direction of the heart by placing the palm of the hand firmly on the skin and moving it with a circular motion first to the right and then to the left.

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